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TITLE: PRODUCTION OF THIN TANTALUM OXIDE FILM

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ABSTRACT:

PURPOSE: To obtain a thin tantalum oxide film of high dielectric constant under controlling the thickness of a SiO_2 film present at the interface to a low level.

CONSTITUTION: The surface of a polysilicon substrate 5 is treated, in a vacuum chamber 1, with hydrogen 13 and argon gas 18's plasma to remove the naturally oxidized film on this surface. $\text{Ta}(\text{OC}_2\text{H}_5)_5$ in an ampul 3 is bubbled by Ar inert gas 4 and introduced into the vacuum chamber 1 where the compound is thermally decomposed and built up as a thin tantalum oxide film of low oxidation degree on the substrate 5; O_2 gas 12 is then introduced into this chamber followed by application of electric field between electrodes 15 and 16, and the above thin film is

irradiated with the
resultant O₂ gas put to plasma decomposition, thus
promoting
oxidation.

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